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Investigators in 777 crash looking at fuel systems

Workers go over the British Airways Boeing 777 that crash-landed Jan. 17 short of the runway at London's Heathrow Airport. The craft's engines failed to deliver needed thrust during its final approach

Investigators studying last week's crash landing of a British Airways Boeing 777 said last Wednesday they are looking closely at the possibility that the accident **was caused by an interruption in the flow of jet fuel to the engines.**



The cause of the Jan. 17 crash at London's Heathrow airport has not been established. Even if it is a fuel-flow interruption, that doesn't necessarily exonerate Boeing.

But this focus of the investigation seems to increase the possibility of an external cause such as **contamination of jet fuel loaded before the 777 took off from Beijing.**

Alternative scenarios, such as a software control-system failure, clearly would be the manufacturer's responsibility and could bring into question the safety of the airplane.

"All possible scenarios that could explain the thrust reduction and continued lack of response of the engines" are being examined, the U.K.'s Air Accidents Investigation Branch said Wednesday.



"This work includes a detailed analysis and examination of the complete fuel-flow path from the aircraft tanks to the engine-fuel nozzles."

The plane, carrying 136 passengers and a crew of 16, lost power about 2 miles from touchdown at a height of 600 feet. It was the first crash in the more than a dozen years that airlines have flown the 777.

The U.K. agency leading the investigation made clear that, contrary to some initial reports, the jet's two Rolls-Royce engines did not fail at precisely the same moment, and neither failed completely.

The aircraft was approaching with the autopilot engaged when the autothrust system commanded the pilot to increase thrust from both engines.

"The engines both initially responded but after about 3 seconds the thrust of the right engine reduced," the report said. "Some eight seconds later the thrust reduced on the left engine to a similar level. ... Both engines continued to produce thrust at an engine speed above flight idle, but less than the commanded thrust."

The accident resulted in few injuries. The co-pilot was credited with **heroic skill** in keeping the plane aloft over nearby houses and putting it down onto the grass 1,000 feet short of the runway.

The report said that "the autothrottle and engine-control commands were performing as expected prior to, and after, the reduction in thrust," suggesting that the primary software controlling the system functioned as it should.

Singling out fuel flow suggests investigators are zeroing in either on **fuel contamination** — perhaps from an external fuel source or maybe from some internal leakage of other fluid into the fuel tanks — or on some leakage in a fuel line serving both engines.

After fueling in Beijing, the plane flew nonstop to London. The fuel tanks would have been low as the jet came in to land at Heathrow. **A contaminant at the bottom of the tanks potentially could have blocked the fuel flow to both engines.**

If that was the cause, **Boeing executives, engineers and mechanics** will let out a sigh of relief.

As a large, twin-engine airplane, the 777's ability to serve airlines on ultra-long-haul routes depends upon the reliability of its engines.

Engines occasionally have failed in flight for various reasons, and the affected 777s have continued flying safely on the remaining engine. No 777 has previously had two engines fail together.

Unlike a typical uncontrolled plane crash into the ground, the jet survived the crash landing largely intact, providing investigators a great deal of information on its condition. Boeing is providing technical assistance to the investigation, company spokesman Jim Proulx said.

Analysis of world airline accidents and incidents in 2007

Global figures for commercial aviation crashes in 2007 show an all-time low of **24 fatal accidents**, and even the number of fatal casualties, at 687, was well below the annual average for the last 10 years. This can be compared with figures for the decade 1998-2007 showing an annual average of **34.6 fatal accidents** a year and 864 fatalities. (see chart below).



Accidents and incidents between January and December 2007

Most of the fatal casualties - **526** of them - happened in **seven accidents** involving scheduled passenger services, and all these flights were operated by jets (see pie charts below). There were seven fatal accidents to passenger flights operated by turboprop aircraft, but because these are smaller aircraft, the number of fatalities was only 95. Only one piston-engined passenger airliner suffered a fatal accident - a BN Islander in Guyana, in which three people died. Sixty-three people died in nine freighter accidents, all involving turboprop aircraft. **There were no accidents to jet-powered freighters, which is rare.**

Russian improvement

The International Air Transport Association observes that Russian passenger operations **improved dramatically** last year compared with a bad 2006, but that figures for Indonesia, southern Africa and Brazil **worsened** despite already being bad.

The worst accident of the year was the TAM Linhas Aereas **Airbus A320** landing disaster at Sao Paulo Congonhas airport which killed 187 on board and 12 people on the ground. Apart from that crash and a Tu-134 landing accident at Samara airport, Russia, that killed six of its 57 passengers, all the accidents to passenger aircraft took place in third-world economies or involved aircraft registered in them - usually both.



The largest number of fatal accidents for a single country was in the **Democratic Republic of Congo**, with six fatal crashes, of which four were cargo flights and two were commuter operations using Let 410 twin-turboprop aircraft. The DR Congo accident picture is worsened by the fact that most cargo flights there **carry unauthorised passengers**, and one of the accidents involved a crash into a Kinshasa residential area, killing an unknown number of people on the ground. Indonesia saw two of the year's worst fatal accidents involving passenger jets - an Adam Air Boeing 737-400 and a Garuda 737-400 - and Adam Air suffered such serious damage to one of its fleet after a heavy landing that the aircraft was written off by insurers.

Bad year for Indonesia

Indonesia's safety performance, consistently in the lower league for 25 years, was particularly bad in 2007. Adam Air started the year with an accident on 1 January in which a Boeing 737-400 was lost over the sea near Sulawesi with no survivors. As the aircraft was lost in deep water, the **accident cause may never be known** for certain, but it was during cruise in an area where tropical storms had been reported, and the **serviceability of the aircraft's weather radar is unknown**. Adam Air saw another landing in which one of its 737s was badly damaged, and Garuda suffered the fatal loss of a Boeing 737-400 that, according to preliminary reports by investigators, landed 80kt (150km/h) **too fast** at Jogjakarta with flaps set only to 5 deg, and overran the runway, catching fire and burning out.

The co-pilot had called for the captain to go around but he did not.

The year saw the destruction of 11 more eastern bloc-built turboprops in fatal accidents, seven of them old Antonovs ranging from An-12s to an An-32. The other four eastern turboprops in fatal crashes were Let 410s, three on passenger operations and one carrying freight a total of 23 people died in them.

In 2005, African Civil Aviation Commission president Tshepo Pheege referred to Antonov turboprops - in the hands of many of the type of operators who fly them in Africa - as "flying coffins", and Uganda banned their use. One of the An-12s that crashed on a freight operation in the Democratic Republic of the Congo had been operating without a certificate of airworthiness since March.

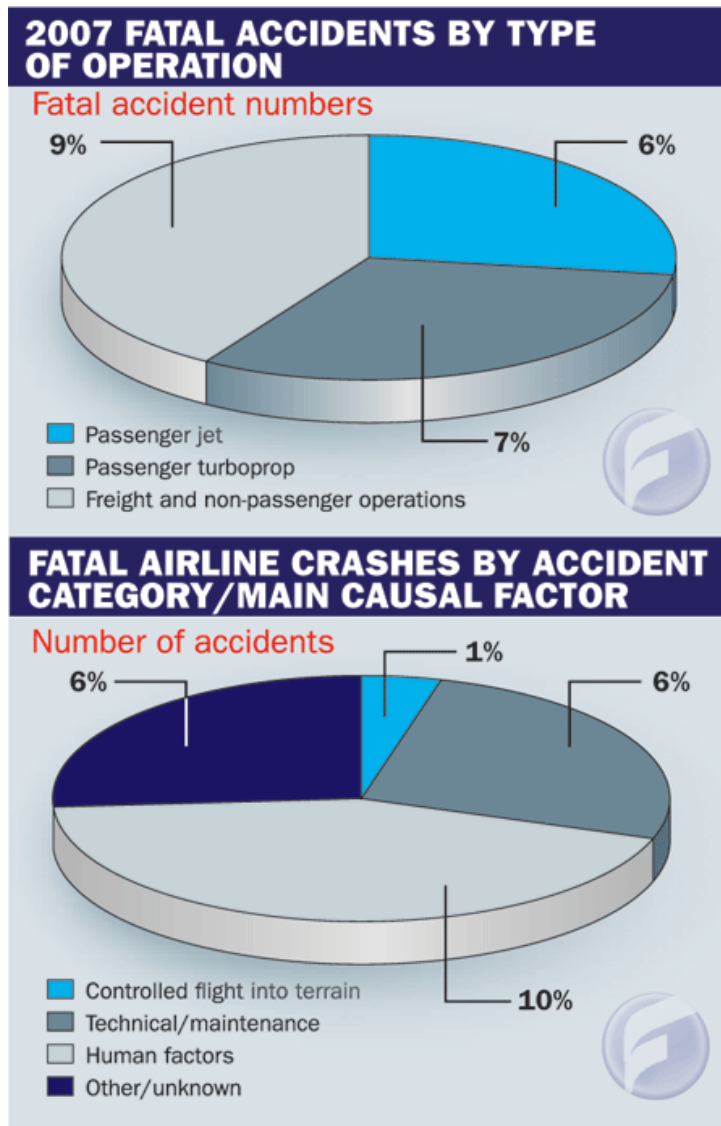
A total of 109 people were killed in Antonov turboprops in 2007, mostly in the DR Congo. Among those who died in the old Antonovs, 54 were killed in two passenger service accidents, and 55 died on five cargo flights. Given that the crew of each cargo aircraft, at most, would have comprised two pilots, a flight engineer and a loadmaster, **some of the casualties must have been passengers.**

In one of the DR Congo In one of the DR Congo accidents - just after take-off from Kinshasa Ndjili airport - an unknown number of people on the ground died when an El Sam Airlift An-26 plunged into a residential area. This was reminiscent of a January 1996 crash that occurred when a Scibe Airlift An-32 abandoned take-off late in its ground-run at Kinshasa N'Dolo airport when the crew realised it would not get airborne. The aircraft ran over the end of the runway into a marketplace, **killing more than 300 people and severely injuring 250.**

Looking at fatal accident categories and main causal factors (see chart on right), there was only one controlled flight into terrain accident, compared with five in 2006.

Accidents in which the primary cause was **human factors** numbered 10 last year compared with 11 in 2006, and

technical/maintenance problems caused six fatal accidents, the same as the previous year. There were six accidents in the **other/unknown** category. All these categories have been determined from **preliminary information**, and may be modified when the full reports are published.



Hull losses

According to aviation insurance specialist Aon, [airline hull losses for 2007 total 47 aircraft](#), including all the 23 fatal accidents listed (see accident listings) and many others that did not cause fatalities. Aon says 2007 will be the first year since 2000 in which insurers will [make a net loss on airlines](#), as much because of the nature of the events as the numbers alone. Three of the hull losses were caused by fire or other mishaps to parked aircraft, and one of them involved the China Airlines 737-800 at Naha airport, Japan, that had just taxied up to the stand with passengers on board when a fuel tank was ruptured by a [damaged flap track](#) during flap retraction, causing a severe fire (see accidents listing). Not included in this hull-loss tally, because the brand new aircraft had not yet been delivered by the manufacturer to Etihad Airways, was the [Airbus A340-600](#) destroyed when it surged forward into a wall during engine run-up checks at Toulouse.

Increase feared

At the end of September, IATA said it was worried that the number of fatal accidents at that point was such that, if they continued to occur at the same rate up to 31 December, the global hull loss accident rate for scheduled passenger operations using western-built aircraft [might increase](#) for the first time in many years. Projected to the end of the year, the rate would have been 0.83 fatal accidents per million sectors, whereas at the end of 2006 the rate was a best-ever 0.65 fatal accidents per million flights.

But there have been no more serious accidents since then, so the rate is expected to be close to the 2006 figure. Neither IATA nor the International Civil Aviation Organisation has yet released a preliminary estimate, however. ICAO says its preliminary traffic figures show airline passenger kilometres flown last year rose by 6.6% over 2006, but the number of sectors operated has not yet been reported. A series of incidents involving SAS Bombardier Dash 8 Q400 twin turboprops had begun before 2007 but continued during last year with [three gear-failure mishaps](#), including one at Aalborg on 9 September. In the Aalborg incident, the right main undercarriage leg failed to lock down and collapsed on landing. In October, SAS decided to stop operating Q400s because of its varied experience with the type ([see 20-20 Hindsight](#)). The question remains whether the problems were related to SAS operations or the type itself, because [one of the gear incidents has been traced to a maintenance error](#), and other Q400 operators report they have not suffered a similar experience.

Finally, IATA says [its top human-factors safety priorities](#) are to improve pilot training for handling critical situations in modern aircraft, and better availability of real-time weather information to crews. Its biggest operational concern is runway incursions and excursions.

Qantas probe 'finds more faults'

A **cracking problem** that caused a near-catastrophic power failure in a Qantas jumbo jet has reportedly **been found in another six** of the airline's 747s.

Water leaked through a **cracked drip tray** under the aircraft's first-class galley last Monday, causing the 747-400 to lose its main electrical power 15 minutes from landing in Bangkok, *The Australian* reported.



The aircraft was forced to rely on a back-up system to land at the Thai airport. The water, which had **leaked from a blocked drain**, shorted one of the plane's generator control units and would have been collected in the tray **had it not been faulty**.

At the time, aviation sources told the newspaper the incident was highly unusual and could have **spelled disaster** for flight QF2 which was carrying 344 passengers from London to the Thai capital.

"If this had happened over the ocean in the middle of the night, it would probably have crashed," an experienced 747 pilot said.

Subsequent investigations by Qantas found cracks in the drip trays of six other jets, according to *The Australian*.

"There were some instances of cracks," a Qantas spokeswoman said last night.

"They were immediately repaired and the aircraft have been cleared."

The airline would not confirm six 747s were found to have faulty drip trays and did not give more details.

Peter Gibson from the Civil Aviation Safety Authority this morning told the ABC **investigations were continuing into whether the crack was a design fault or a maintenance issue**.

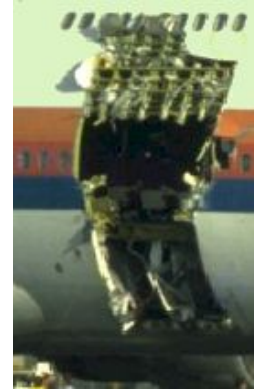
"Well clearly there was a failure in the drip tray as well which allowed the water to get through," he said.

"If that hadn't have happened obviously the water wouldn't have entered into the electrical component and obviously Qantas and indeed the Civil Aviation

Authority have been talking to the manufacturer of Boeing about this issue from day one."

Ageing electrics puts focus back on air safety

Fewer aircraft crashes and an increasing preoccupation with terrorism seem to have muted public concern about air-safety issues. However, the recent mid-air electrical failure on a Qantas 747 and imminent industrial action by Qantas maintenance engineers may reawaken interest.



Electrical faults are far more prevalent and dangerous than generally reported. Eleven years ago they downed Trans World Airways Flight 800 on take-off from New York. Since then, wiring faults have killed hundreds and come within a hair's breadth of killing hundreds more. Slowly the aviation industry acknowledged that a hazard exists, but implementing remedies is taking years too long; not nearly enough has been done yet to minimize known risks.

The saga of ageing wire did not begin with TWA 800. In 1989, as United Airlines Flight 811 left Honolulu for Sydney, two thin wires rubbed together and a short-circuit powered open the latches on the cargo door in the belly of the Boeing 747. When the aircraft reached 23,000 feet, the huge door burst open and ripped off in the slipstream, tearing away part of the fuselage; nine passengers were blown out through the hole.

The cause of the 1989 accident never attracted much attention, partly because, at first, a cargo handler was blamed. He was accused of not closing the door properly; typical human error. It took 18 months to find and recover the door from 5km down on the ocean floor; a stunning feat achieved using radar records, trajectory analysis, appraisal of ocean currents, sonar search, unmanned and manned submersible vehicles.

After studying the door and its internal wiring, the National Transportation Safety Board changed its earlier findings. The probable cause became a faulty switch or wiring in the door control system which permitted electrical actuation of the door latches toward the unlatched position after initial door closure and before take-off. Contributing to the cause of the accident was a deficiency in the design of the cargo door locking mechanisms, which made them susceptible to deformation, allowing the door to become unlatched after being properly latched and locked.

Another reason why wire faults did not get attention at that time was because of aviation's preoccupation with fixing ageing structures problems.

A year before the door accident, an old Aloha Airlines Boeing 737 lost much of its fuselage in flight. Flight attendant Clarabelle Lansing was blasted from the plane and most of the 89 passengers were injured, but miraculously the plane survived.

Reasons for the fuselage failure were soon clear, none were unexpected, some had been known for 20 years. **Riveted skin joints failed because of fatigue, corrosion, faulty repairs and undue reliance on inspections, instead of fixing known defects.**

United States Congress, enlightened airlines and a few regulators persuaded the aviation industry that the **underlying problems were endemic** and not limited to Aloha, Boeing or to the 737. Eventually, every known defect caused by aging structures had to be reassessed and rectified; **inspection alone was no longer allowed.** Maintenance was intensified and better corrosion control instituted.

Meanwhile, the hazards of **ageing wire** were disregarded until TWA Flight 800 crashed off Long Island in July 1996. Fuel in a near-empty tank of the Boeing 747 exploded, according to the board **probably** because of a short-circuit outside the centre wing tank that allowed excessive voltage to enter it through electrical wiring associated with the fuel quantity indicating system. The **board also blamed the basic design**, because 747s (and other Boeing airliners) have heat exchangers under the centre tanks which inevitably warm the fuel, making vapor much more flammable.

Again action was forced at a political level. The Clinton administration set up a Commission on Aviation Safety and Security that insisted in cooperation with airlines and manufacturers, and that the Federal Aviation Administration's ageing aircraft program should be expanded to cover non-structural systems. **Spot checks of wiring on old aircraft found poor design, shoddy installation, defective maintenance and deterioration of insulation.** Concerns escalated when Swissair Flight 111, an MD-11, crashed in September 1998 after a cockpit fire, apparently triggered by defective insulation on ageing wires. It also emerged that standards for flammability, particularly of **thermal insulation blankets**, did not account for temperatures generated by an electrical short-circuit and wiring of a recently installed passenger entertainment system was faulty.

Unlike major accidents, many dangerous incidents like the recent one on Qantas flight QF 2 usually escape media scrutiny. For instance, **tanks exploded on two Boeing 737s**, just like TWA 800, but they happened on the ground and were largely ignored. NASA, too, got involved in 1999 when **wiring faults on Space Shuttle Columbia** failed two computers during launch. With little fanfare, the fleet was grounded and investigators reportedly found 3500 wiring defects on the fleet.

In June 2003, **Concorde's** demise was hastened by a wiring fire. Fuel seeped from a tank into a fairing and was ignited by a fuel pump wire chafing and sparking against structure. Fortunately, the fire self-extinguished and only became known a week later during routine investigation of an electrical discrepancy.

All this prompted the Federal Aviation Administration to convene the [Ageing Transport Systems Rulemaking Advisory Committee](#), which recommended changes to wiring system design, certification and [maintenance](#), and initially led to a swath of airworthiness directives to address obvious hazards on specific aircraft types. Then in October 2005, 16 years and nearly [500 deaths](#) after UA 811, the Federal Aviation Administration proposed new rules for enhanced safety of electrical wire interconnection system from both design and maintenance perspectives. These new rules did not become law until December 2007.

[Full implementation](#) will take [another three years](#) and cost over \$400million. Even then, the most contentious safety improvement may never happen.

The Federal Aviation Administration proposes that in addition to minimizing the risk of a spark, fuel tank voids should be filled with inert gas to prevent explosions. This is already done on military aircraft. Boeing plans to do so on its new 787 but Airbus has designed the A380 super jumbo without a centre tank and sees no need for inerting. Existing airplanes are never likely to be fixed. Every airliner has hundreds of kilometers of wire; all of it deteriorates and much of it is not accessible. Faults remain a daily occurrence; so too the risks.

[CHC Shares Practical Tools for a Safety Culture](#)

Mr. Sylvain Allard, President and CEO of CHC Helicopter Corporation, invites you to attend our 4th annual CHC Safety & Quality Summit from March 31 to April 2, 2008, in beautiful downtown, Vancouver, BC, Canada, at the Fairmont Hotel Vancouver.

The theme of the 2008 CHC Safety & Quality Summit is "[Practical Tools to Build a Safety Culture: Leveraging Your Safety Management System to Reduce Human Error](#)".



Last year's Summit attracted well over 300 delegates from over 140 different aviation organizations, representing 27 countries. The most common response of the Summit review was, "[This was the best safety conference I have ever attended.](#)" We expect the same standard and almost double the attendance. CHC hopes you will be part of this conference, a true gathering of the best minds in aviation.

[More than 50 workshops from world renowned speakers including:](#)

Dr. Scott Shappell, Dr. Doug Wiegmann, [human factors](#) speakers and authors of HFACS;

Dr. Patrick Hudson, author and speaker on Safety Culture;

[Dr. Bill Rankin, author of Boeing's MEDA program;](#)

Dr. Peter Gardiner, the President & CEO of the Southern California Safety Institute;

Mr. David Downey, Manager of the FAA's Helicopter Directorate;
Mr. Tom Anthony, Director of the USC Aviation Safety & Security Program;
Mr. Jim Burin of the Flight Safety Foundation;
Mr. Bob Williams Chair of the Oil & Gas Producers Aviation Sub-Committee, and many others.

Organizations like PHI Helicopters, the Airborne Law Enforcement Agency (ALEA), AAMS, HAC, HAI, FlightSafety International, Sikorsky and Eurocopter will also be presenting the best practices in aviation safety, **human error management**, training and more. Willis group will be facilitating an interactive workshop on "How a Small Operator can Reduce Insurance Premiums", which will include representatives from approximately a dozen Aviation Underwriters.

The key note speaker for this Summit will be the engaging Sergei Sikorsky, who will share his visual "Reflections of a Pioneer" at the Summit dinner.

"It was truly thought-provoking material and all who attended benefited considerably.

I learned a great deal." 2007 Delegate, Matt Jennings, Shell

Warning on plane crash prosecution

Safety experts in Australia and the US have warned that Indonesian authorities **may put lives at risk** if they use the evidence from an investigation into last year's Garuda crash in Yogyakarta **to prosecute** the pilot.

Indonesian reports suggest police are working towards charges later this month, and are preparing a case against pilot-in-command Marwoto Komar based on the accident investigation.

National chief of detectives Bambang Hendarso Danuri was quoted on Indonesian news website detik.com as saying that a hearing in mid-January would be based on the results of an investigation conducted by Indonesia's National Transportation Safety Committee.

The Boeing 737-400 careered off the runway and burst into flames in March last year, **killing 21 people**, including five Australians.

Investigators found Mr. Marwoto **ignored 15 warnings** to abort the landing, and the aircraft was traveling at almost twice the normal speed as it touched down.





Australia has called for the **prosecution** of the pilot. Kevin Rudd phoned the head of Indonesia's Department of Foreign Affairs last year to tell him Australians expected the investigation to be "prosecuted to the absolute full".

But the **Aviation Safety Foundation Australasia has joined its US counterpart** to warn against launching a case based on evidence from the safety investigation. The foundations are worried that such a move would undermine the "**just culture**" concept that encourages people to come forward and provide information without fear of prosecution. That information is **often crucial to preventing a recurrence** of a dangerous event.

"The lives of future passengers are dependent on the **important safety information** that is normally gathered during an accident investigation," said foundation chairman Trevor Jenson, a former chief pilot at Qantas and Ansett.

"Our concern is that if there is a fear of prosecution, then the parties involved will be **less inclined** to be open during the investigation process."

Mr. Jensen said the foundation was not saying a pilot should not be prosecuted if he did something deliberately wrong or was negligent. But he said police should conduct a **separate investigation** and gather their own facts.

"The big fear is that if we have the aviation investigators' records and discussions just being handed over and being used as the basis of a police investigation, people will start turning up with lawyers or whatever and **we won't find out the real cause,**" he said.

This position backs up a **US Flight Safety Foundation** statement released earlier this week.

"International standards clearly state that it is not appropriate to pursue criminal charges based on the data collected during a safety investigation," president William Voss said. "In situations of gross negligence or malfeasance, the judicial authorities need to **pursue their own, separate investigation.**"

Pilot groups have also called for a focus on identifying the underlying reasons for a string of crashes in Indonesia, rather than on prosecution.

The International Federation of Airline Pilots' Associations said last year that the International Civil Aviation Organization had long determined that inappropriate prosecution could often be an **impediment** to identifying system failures.

"As with any other complex, technical **profession, errors and event chains** in piloting are seldom simple, requiring detailed examination by fully qualified professionals to understand all underlying factors leading to a particular failure," the federation said.

Brooklyn

Local Residents Re-Create A Piece Of Brooklyn Aviation History

A group of aviation buffs in Brooklyn are re-creating a piece of history -- building a super-sized model airplane.

It was 1933 when Wylie Post became the first pilot to go around the world solo. He started and finished his journey at [Floyd Bennett Field in Brooklyn](#).



That's where a full-size replica of his plane, a Lockheed Vega called Winnie Mae is in the works.

"We're trying to [leave something for the next generation](#)," said Dante DiMille of the Winnie Mae Project. "This is basically what we are after; this is our mission."

DiMille says he fell in love with the plane as a kid. He and other volunteers have been working on the model of the single engine transport for three years in a hangar at Bennett Field with a grant from the National Parks Foundation.

Even though the plane will never fly, members of the Winnie Mae crew say it's a one-of-a-kind experience.

"This is just an incredible thing because this is a piece of New York history that we are building, and it's something we hope the people of New York are really going to enjoy in years to come," said John Rubel of the Winnie Mae Project.

"I've always built model airplanes, so this is a chance to build a big one," said another participant Larry Valenza.

[The original Winnie Mae is at a museum in Virginia](#), but the one taking shape in Brooklyn is in a hangar full of aviation history -- where volunteers are working to restore other aircraft from the past.

"This is such a historic spot, these airplanes are more than airplanes, they are [artifacts](#); they are historic artifacts," said Tony Yellen of the Historic Aircraft Restoration Project.

The dedicated workers say they have two main obstacles; one is they need more funding, and the other is manpower. They would like some more people to help out with the project.

"We are basically after [young people](#), this is what we need, because most of the guys in here are 75 plus," said DiMille.

DiMille hopes to complete their version of the Winnie Mae by the end of the year.

Those interested in lending a hand or just checking out some aviation history at the hangar can come by Tuesdays, Thursdays, and Saturdays from 10 a.m. to 4 p.m. For more information call 718-338-5986.

Multitasking Can Harm Your Health

Multitasking may be one of the hot bywords of the New Millennium, but several studies show it can be hazardous to your health. In plain terms, the **studies show** people can only do so many things at one time before everything starts to slide downhill.

People who love to **talk on their cell phones while driving** should be aware, for instance, that the Federal Aviation Administration and University of Michigan researchers discovered that the time involved in switching back and forth between tasks **while driving or flying may be critical to avoiding an accident.**

Virginia Tech researchers using “black box” data confirmed these findings, proving that **distractions**, including the use of hand-held portables, contributed to **80 percent** of all crashes in their study.

UCLA research shows **you don't learn as well** when dividing attention between learning new information and watching TV or listening to the radio, or talking on your cell phone, for that matter. Such **diversions**, they found, don't allow you to be as flexible in the use of the new information as you would have been with full attention giving to the learning, whether that information is for passing a Bar exam or Real Estate exam, or learning to safely operate a new power saw or electric carving knife.

There is in addition **hidden health harm caused by multitasking**, even if you **escape car and plane crashes**, manage to operate your new saw or knife without losing fingers, and don't burn the house down: **the stress** involved in multitasking takes a toll on your body by producing the **stress hormone cortisol**. Over a period of time – and if the level of stress is great enough – cortisol can set you up for obesity and inflammation, which in turn lead to numerous physical problems including **neurological** changes and **heart** conditions. Perhaps the new hot byword should be **“minimize multitasking.”**

Aerospace Industry Trains Nurses

Soaring to new heights in patient safety, nurses practicing at Memorial Healthcare System's Broward County hospitals are **borrowing successful aviation practices** — **checklists**, **briefings**, and **debriefings** — to improve care.





“Our goal is to be the **safest** OR in Florida and the United States,” says Pat Collins, RN, assistant director of nursing for surgical services at Memorial Regional Hospital in Hollywood, Fla. “I think we are well on our way to achieving that with this program.”

Memorial hired Memphis-based LifeWings Partners LLC, a group of physicians, nurses, fighter pilots, former NASA astronauts, airline captains, medical executives, and insurance experts, to show the health system’s nurses and physicians how to employ **teamwork training** concepts and **safety tools** to **reduce preventable medical errors**.

“**The root cause** of most identified problems that occur in a health system is **communication**,” says Colleen Solomon, RN, BSN, CNOR, director of nursing for surgical services at Memorial Hospital West. “These **tools** will help us to improve communication among all team members.”

According to LifeWings President Stephen W. Harden, **there are six reasons communication breaks down**:

- **Failure** to brief the plan and develop a shared mental model of the plan of care
- **Failure** to speak up and be assertive with concerns about the impending action or decision
- **Failure** to clarify confusion or ask questions
- **Failure** to acknowledge communication or “close the loop”
- **Failure** to ask for, or provide, feedback or a “read back” on critical information
- **Failure** to use standard terminology

Educational sessions show nurses and doctors how to use the processes. “**Aviation went through [process upgrades] 10 or 15 years ago to improve its safety record**,” Solomon says. “Why reinvent the wheel? Here’s a successful program.”

LifeWings claims the company’s process can **enhance caregiver attitudes** and employee satisfaction. Using examples from the company’s 45 clients, LifeWings representatives claim their system can achieve these results:

- **75%** improvement in pre-procedure antibiotic administration
- **50%** improvement in observed to expected mortality ratios
- **40%** decrease in Class 1 surgical infections
- **50.1%** reduction in surgical counts errors
- **51%** improvement in OR turnaround times
- Reduction in nurse turnover to less than 2%
- **57%** improvement in observed to expected mortality with patients with risk of mortality of less than 10%
- Approximately **50%** decrease in open claims files for potentially compensable events

Memorial had long followed a pre-surgery **time out**, but the hospital has expanded that practice. It now uses **checklists** in pre-procedure areas. Once in the operating room, the surgeon **briefs the team** about the case, what to expect, and what complications could occur. All staff members participate and can ask questions.

The case ends with a **debriefing**. All participants can speak up about what could have gone better. Management follows up to ensure these issues are addressed.

“It’s going really well,” Collins says. “We’ve had a couple of issues. The crew helped give staff the support they need to bring up their concerns.”

The program rolled out first at Memorial Regional with a two-day leadership seminar, followed by sessions for surgeons, anesthesia, and other staff. The health system then brought Memorial Regional Hospital South and Memorial Hospital West on board, followed by other Memorial hospital surgical suites.

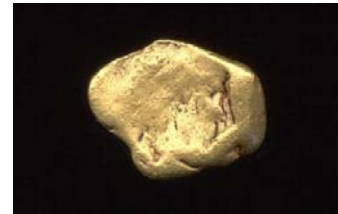
“We believe it will also increase our efficiency as **everybody does the same thing every time the same way**,” Collins says.

Once all are operating using the new systems, the health system will **expand** the program to endoscopy, interventional radiology, labor and delivery, and other procedural areas. Eventually, everyone at Memorial will follow the safety procedures.

Midnight Shift Nugget

Tips For Sleeping Soundly

- **Make sleep a priority.** Block out seven to nine hours for a full night of uninterrupted sleep, and wake up at the same time every day, including weekends.
- **Establish a regular, relaxing bedtime routine.** Avoid stimulating activities before going to sleep.
- **Never watch TV, use the computer, or pay bills before going to bed.** Read a book, listen to soft music, or meditate instead.
- **Avoid coffee, chocolate, caffeinated soda, or nicotine.** These are stimulants that can keep you awake.
- **Make sure your bedroom is cool, dark, and quiet.** Consider using a fan to drown out excess noise, and make sure your mattress and pillows are comfortable.
- **Use your bedroom as a bedroom.** It should be for sleeping and relaxing only, not for watching TV or doing work.
- **Clear your head.** Keep worry and stress outside the bedroom.



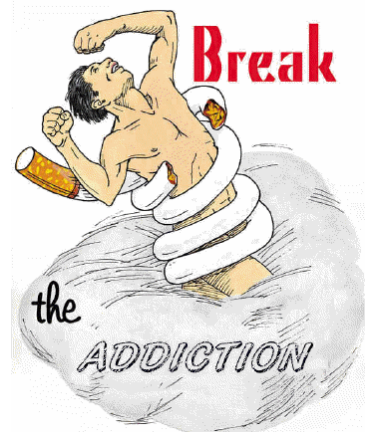
- Exercise. Regular exercise will help you sleep better, but limit your workouts to mornings and afternoons.
- [Get into bed only when you are tired.](#) If you don't fall asleep within 15 minutes, go to another room and do something relaxing.
- [Avoid looking at the clock.](#) This can make you anxious in the middle of the night. Turn the clock away from you.
- [Do not take naps.](#) Taking a nap can throw off your body clock. If you are particularly tired and feel you must nap, sleep no more than half an hour.
- [Talk to your doctor](#) if you still have problems falling asleep. You may need a prescription or herbal sleep remedy.

[Tips To Manage Stress](#)

- [Catch those zzzzs.](#) When stressed, your body needs sleep and rest.
- [Do your best instead of trying to be perfect.](#) Perfection isn't possible, so be proud of however close you get.
- [Take a time-out.](#) Do yoga, listen to music, volunteer, or get a massage. Stepping back from the problem lets you clear your head.
- [Accept that you cannot control everything.](#) Put your stress in perspective: Is it really as bad as you think?
- [Take deep breaths.](#) Inhale and exhale slowly.
- [Count to 10 slowly.](#) Repeat, and count to 20 if necessary.
- [Use humor.](#) A good laugh goes a long way.
- [Keep moving.](#) Regular exercise releases mood-enhancing chemicals.
- [Try to keep a positive attitude.](#) Replace negative thoughts with positive ones.
- [Eat well-balanced meals.](#) Don't skip meals, including breakfast. Do keep healthful, energy-boosting snacks on hand.
- [Learn what triggers your anxiety.](#) Is it work? Family? School? Something else?
- [Talk to someone.](#) Let friends, family, or a doctor know you're feeling overwhelmed, and tell them how they can help.

[Quit It](#)

No wonder wannabe ex-smokers try many times before kicking the habit. Nicotine induces **changes in brain structure** believed to cause addiction. What's more, according to one study, from 1998 to 2004 U.S. tobacco companies **upped** the nicotine delivered in each pack puff by, on average 11 percent. Addiction can come quickly: In a four-year study of 1,264 adolescents, of those who became hooked, one in ten showed signs **within two days** of first inhaling.



Even smokers of relatively few cigarettes had withdrawal symptoms when deprived of nicotine. New medications may help. Varenicline blocks nicotine receptors to decrease the urge to smoke. The vaccine NicVax –now in clinical trials- pushes the immune system to make antibodies that keep nicotine from entering the brain.

Smoking Signals

- **Number of U.S. smokers:** 1 in 5 adults (45.1 million)
- **Yearly U.S. deaths caused by smoking:** 1 in 5 (438,000)
- **Smokers who quit for at least a day each year:** 19.2 million
- **Percent who stay tobacco free for three to 12 months:** 5 percent
- **Benefit after one smoke-free year:** Risk of coronary heart disease cut in half
- **After 10 smoke-free years:** Risk of lung cancer drops by as much as half.

Picture This!

In getting their jobs done, some people go to great lengths, while some soar to the heights of **madness**. The two gentlemen in this picture seem determined to be remembered as the **second sort**. Loader buckets are prone to being misused as elevators, but this is an unusually bad example. Would you accept a lift from either of these men? Would your co-workers?



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